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was particularly striking. From the extreme northwest a broad band of deep red, like a cloud reflection of a conflagration, spread upward to a point in the constellation Cancer, just south of the zenith, where it terminated within a horseshoe-shaped mass of white having the convex side toward the north. A similar but less brilliant red cloud extended from this point toward the east. Culminating at the same point within the horseshoe were greenish white streamers extending in all directions to the horizon. At this time also there was another red patch covering somewhat more than the area of the Great Bear in the northeast. Athwart this ran the zenith streamers from the north horizon.

At 10:45 the overhead display was fading and a broad red patch in the northwest covered Cassiopeia. This rapidly divided into two parts, drifting west and south.

By 10:30 the effect had practically disappeared except for a greenish glow toward the north.

Although the deep red color was massed in the streamers and patches mentioned, the entire sky was tinged with red, shading gradually outward from these dense masses.

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SCIENTIFIC BOOKS

Catalogue of the Hemiptera of America North of Mexico, excepting the Alphididae, Coccidae and Aleurodidae. By EDWARD P. VAN DUZEE. University of California Press 1917. Pp. i-xiv, 1-902.

The completion of this great paper marks another distinct advance in the study of North American insects. The large order Hemiptera has had comparatively few devotees, though select, as the names of Fieber, Stål, Reuter, Bergrot, Horváth, and Uhler will indicate, and until recently its study has been somewhat backward as regards quantity if not quality. During the last few years, however, a great many of the younger students of entomology have elected to become hemipterists, and in consequence there has been a sudden

increase in scattered contributions with a general rise of interest in the order. The present is, therefore, a peculiarly fortunate time for the appearance of a full bibliographical catalogue which brings together in orderly and properly conservative form a report of what has so far been accomplished and furnishes an adequate basis for further advance. Hemipterists, if few in number, have been unusually prolific, as is attested by the more than 900 large pages of the volume under consideration.

Careful examination of the work reveals a well-planned and faithfully executed enterprise. The author exhibits a masterly grasp of his subject, as a whole and in detail, and his production merits the warmest praise in every respect. In the introduction Mr. Van Duzee gives a clear and convincing statement of the nomenclatorial principles which have guided him. These are his well known and by no means ultra-conservative views, grounded firmly on the International Code, eminently logical in theory and successful in practise. For the first time the principle of priority is applied and fully worked out in connection with the names of all taxonomic groups, with such happy results that to me the general adoption of this plan seems sure. Original spellings are retained, but the author expressly disclaims any intention of restraining those who refuse to assist in perpetuating philological and grammatical errors. In addition to these general matters, a number of special points deserve particular attention.

In recording the distribution of the species, the author has done well to abandon the method of his recent check list, simply giving under each species a list of the states in which it is known to occur. As he remarks in the introduction, "our knowledge of the distribution of our species is still too fragmentary to allow the satisfactory naming of a habitat,"—a procedure too frequent in hemipterological writings. In this way the student is forcibly reminded of the extensive lacunæ existing in this branch of the study, and he can go about the business of filling them with some confidence. The scarcity of

Canadian records is particularly striking—and regrettable, in view of the apparent significance of holarctic migrations in the past. Omissions seem very few, considering the magnitude of the work. I note the absence of certain published records, *e. g.*, *Sciocoris microphthalmus* (Palaearctic), *Zelus socius* (Me., Mass.), and a scarcity of Maine records before page 151.

It is an especial pleasure to report the extreme care which the author has evidently taken to avoid minor errors, clerical and typographical. This class of mistakes, though hardly susceptible of complete extermination, has been reduced to an attenuated minimum, contrasting most favorably with much past and contemporary work. *Dictyonota tricornis americana* page 815, occurs in Maine, not "Mo." *Lethiini* (properly *Lethæini*) on page 196, and *Systelloderus* (properly *Systello-deres*) on page 225, are lonesome examples of misspelling, I believe.

The typography calls for a special word of praise. The choice of types and the arrangement of the matter on the page are unexceptionable and aid the eye greatly in making quick reference, quite in contrast to the arrangement adopted in the author's check list.

The species are numbered in agreement with the check list, additions being indicated by fractions, a detail which will serve the convenience of collectors, though it conveys a wrong impression regarding the number of species comprised in the various groups. The author gives 3,198 as the number of North American species now included in the order (three families excepted), a net gain of 253 since the check list appeared in 1916. Of this total the Heteroptera number 1,629, the Homoptera 1,569.

A publication of this type must appeal to a far wider circle than that of the comparatively few specialists to whom it is of most immediate and intense interest, since every biologist has frequent occasion to ascertain the present taxonomic status or the known distribution of some form with which he may be concerned. Entomologists will at once per-

ceive the value of Mr. Van Duzee's work—to others it may be recommended unreservedly as authoritative and reliable in the highest degree.

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SPECIAL ARTICLES REPORTING MOISTURE RESULTS¹

THE following quotations² is explanatory of the soil physiists' use of the term percentage in connection with weight determinations of moisture.

Suppose a certain soil in field condition weighs 100 pounds to the cubic foot and carries 10 pounds of water. Obviously it would contain 10 per cent. of water by the wet method of calculation, or 11.1 per cent. of water using the absolutely dry soil as the basis. . . . In ordinary calculations of water, . . . the percentage by dry weight is generally used because of its simplicity and the facility of expression that it affords.

Analyses are reported by chemists both on the wet and dry bases. The form in which an analysis is usually stated is as follows:

TABLE I
Soil Analysis

	Wet Basis, Per Cent.	Dry Basis, Per Cent.
Moisture	20.0	
Volatile matter	20.0	25.0
Ash other than silica.	10.0	12.5
Silica (SiO_2)	50.0	62.5
Total	100.0	100.0

It is noted that the per cent. of moisture contained is not included in the dry basis analysis.

To ascertain if the practise of stating the amount of water, present for every 100 parts of dry material, as "per cent. of moisture on the dry basis" leads to false interpretations the following data was given to several chemists and to three soil physiists:

¹ Contribution from Research Chemistry and Bacteriology Laboratories of department of horticulture, Purdue University Agricultural Experiment Station, Lafayette, Indiana.

² "Soils, their Properties and Management," 1915 edition, by Lyon, Fippin and Buckman.